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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,401	11/03/2003	Shi-Ming Chen	87391.0300	3435

7590 09/28/2004  
BAKER & HOSTETLER LLP  
Suite 1100  
Washington Square  
1050 Connecticut Avenue, N.W.  
Washington, DC 20036

EXAMINER
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BAUMEISTER, BRADLEY W

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 09/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/698,401

Applicant(s)

CHEN, SHI-MING

Examiner

B. William Baumeister

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 August 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 5, 7-10 and 12-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6 and 11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of invention IA in the reply filed on 8/30/04 is acknowledged. The traversal is on the ground(s) that a search of both claimed species would purportedly not constitute an undue burden. This is not found persuasive because a thorough search and examination of the elected species would not necessarily result in a thorough search of the non-elected species, as a keyword-based prior-art search for metals would not necessarily generate any references for organic materials. Moreover, Applicant's position that the species are separately patentable, and non-obvious over each other, further evidences that the additional search and consideration required for the non-elected species would constitute an undue burden.

The requirement is still deemed proper and is therefore made FINAL.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-4, 6 and 11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Stringfellow et al., "High Brightness Light Emitting Diodes," pages 195-199 teaches that the concept of using

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metallic interlayer wafer-bonding for LEDs was generally known, but that this approach was problematic because the resultant metallic interfaces caused unacceptable absorption and reflection (see e.g., page 197 and the table on page 198). As applicant has not set forth any examples of specific metal solder compositions, thicknesses or associated methods, the specification does not reasonably teach the skilled artisan how to make the invention so that the solder transmits light to and from the underlying transparent substrate/reflector combination.

*Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-4, 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '857 in view of Nakamura et al. 558.

a. JP '857 discloses an LED formed on a transparent sapphire ( $\text{Al}_2\text{O}_3$ ) substrate with an interposed Al "solder" layer 202. See e.g., FIG 9 wherein the other side of the substrate is coated with "silver paste 908 [p. 0060] ("a reflective metal having high light reflectivity"). JP '857 does not anticipate the claims because it does not further disclose the LED possessing a transparent conductive layer located on the semiconductor epitaxial layer.

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- b. Nakamura '558 teaches that it was known to provide the p-side of the LED with a transparent conductive electrode<sup>15</sup>. (See e.g., col. 5, lines 40-54, setting forth various potential compositions usable for this transparent conductive layer.)
- c. It would have been obvious to one of ordinary skill in the art at the time of the invention to have employed in conjunction with the LED of JP '857, a transparent conductive layer overlying the p-type semiconductor layer for the purpose of increasing the lateral current spreading in the p-type semiconductor material as taught by Nakamura.

### *Conclusion*

- 6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
  - a. Schnitzer et al., "Ultrahigh spontaneous emission quantum efficiency, 99.7% internally and 72% externally, from AlGaAs/GaAs/AlGaAs double heterostructures," Appl. Phys. Lett. 62 (2), 11 January 1993, pp. 131-133; cited by Stringfellow.

### *Contact Information*

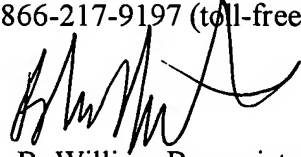
Any inquiry concerning this communication or earlier communications from the examiner should be directed to B. William Baumeister whose telephone number is (571) 272-1722. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**BRADLEY BAUMEISTER**  
**PRIMARY EXAMINER**



B. William Baumeister  
Primary Examiner  
Art Unit 2815

September 25, 2004